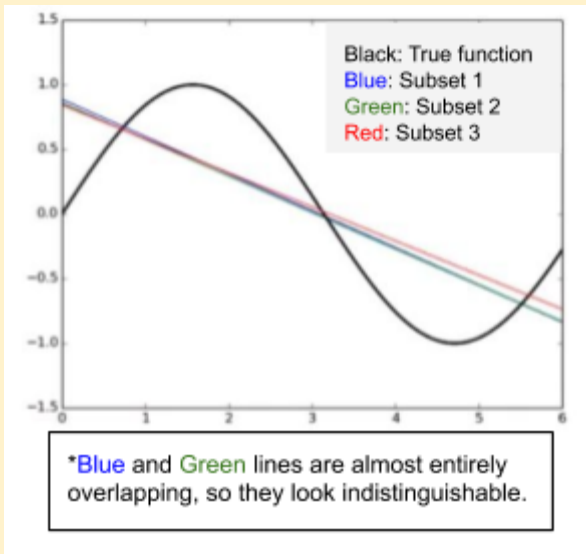


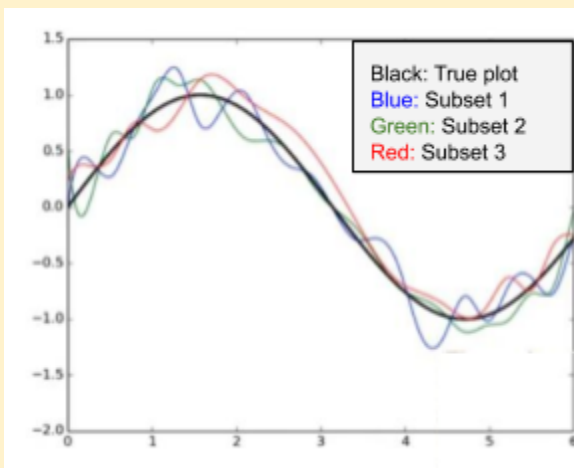
Analysing the behaviour of simple and complex models

What happens if you train using different sets of training data

1. Consider a dataset of say 1000 points. When we train our models (Simple and Complex), we shuffle the dataset and then take different subsets of data (around 100 points each).
2. Let us observe how the two models behave when dealing with varying training subsets from the same dataset.
3. **Simple**(degree 1): $y = \hat{f}(x) = w_1x + w_0$
 - a. Let us look at how the model behaves for 3 different subsets of 100 points each



- b. What we can infer from this is that the model is not very sensitive to the training data, i.e. the model doesn't respond too much to the points given, thus all the predicted lines are very similar to each other.
4. **Complex**(degree 25): $y = \hat{f}(x) = \sum_{i=1}^{25} w_i x^i + w_0$
 - a. Let us look at how the model behaves for 3 different subsets



- b. Here, we can see that each of the functions are quite different from each other
- c. What we can infer from this is that the model is highly sensitive to the training data provided, i.e. The models adapt highly to the points given, thus producing different plots each time.